DOCUMENT RESUME

ED 447 257 CE 080 394

AUTHOR	Wonacott, Michael E.
TITLE	Web-Based Training and Constructivism. In Brief: Fast Facts for Policy and Practice, No. 2.
INSTITUTION	National Dissemination Center for Career and Technical Education, Columbus, OH.
SPONS AGENCY	Office of Vocational and Adult Education (ED), Washington, DC.
PUB DATE	2000-00-00
NOTE	4p.
CONTRACT	V051A990004
AVAILABLE FROM	For full text: http://www.nccte.com/publications/infosynthesis/in-brief/inbrief 02-webtraining.pdf or http://www.nccte.com/publications/infosynthesis/in-brief/inbrief 02-webtraining.html.
PUB TYPE	Information Analyses (070)
EDRS PRICE	MF01/PC01 Plus Postage.
DESCRIPTORS	*Constructivism (Learning); Curriculum Development; *Educational Practices; *Educational Technology; *Learning Theories; Postsecondary Education; *Teaching Methods; *World Wide Web
IDENTIFIERS	*Web Based Instruction

ABSTRACT

To many educators, Web-based training (WBT) is the constructivist ideal--learners can construct meaning through self-directed inquiry, guided activity, and group collaboration on the information highway, the digital library, cyberspace, or the global village. Although research on the effectiveness of WBT as a vehicle for constructivist learning is scanty, findings from other areas can be applied. For example, WBT provides full, rich information from innumerable sources, can accommodate differences among learners, allows learning activities that foster construction of meaning, and helps instructors make the change from giver of knowledge to guide, facilitator, and coach. Although the technology of WBT allows, enables, and promotes constructivist learning, WBT does not always deliver in practice. Reasons include: that some learners need new technology skills, some instructors have difficulty incorporating WBT into their teaching, some instructors find it difficult to function as a guide, and the amount of information available can be overwhelming or be out of date. Considering advantages and disadvantages, one could conclude that although enormous amounts of information can be available on the Web, it is not always accessible or usable. In addition, although WBT has the capability needed for allowing learners to construct meaningful learning, it is not always used, and it may not always be appropriate. Implications for policy and practice show that instructional design, not merely technology for its own sake, should drive the use of WBT and that learners and instructors need appropriate training to take advantage of this approach. (Contains 18 references.) (KC)

Reproductions supplied by EDRS are the best that can be made
from the original document.

ED 447 257

Web-Based Training and Constructivism
In Brief: Fast Facts for Policy and Practice
No. 2

Michael E. Wonacott

U.S. DEPARTMENT OF EDUCATION
Office of Educational Research and Improvement
EDUCATIONAL RESOURCES INFORMATION
CENTER (ERIC)
This document has been reproduced as received from the person or organization originating it.
Minor changes have been made to improve reproduction quality.
Points of view or opinions stated in this document do not necessarily represent official OERI position or policy.

National Dissemination Center for Career and Technical Education
The Ohio State University
1900 Kenny Road
Columbus, OH 43210-1090

BEST COPY AVAILABLE

CE080394

IN Brief
Fast Facts for Policy and Practice
2000 no. 2
National Dissemination Center for Career & Technical Education
by Michael E. Wonacott

Web-Based Training and Constructivism

To many educators, web-based training (WBT) is the constructivist ideal–learners can construct meaning through self-directed inquiry, guided activity, and group collaboration on the information highway, the digital library, cyberspace, the global village. But is this vision of WBT as the constructivist ideal real or illusory (Wilson and Lowry in press)?

What Is WBT?

Although experts may disagree on technical issues, WBT can include almost any kind of training provided through a network of computers (Driscoll 1999). Web computer-based training (CBT) is similar to CBT delivered via CD-ROM. In electronic performance support systems (EPSSs), online job aids and tools provide information to help workers solve specific problems. Virtual asynchronous classrooms link users online at different times with communication tools like e-mail, online forums, bulletin boards, and listservs. In virtual synchronous classrooms, all users are online at the same time using audioconferencing, videoconferencing, chat rooms, and shared applications.

What Is Constructivism?

Constructivism, a theory of learning, holds that learners actively construct meaning by interacting with their environment and incorporating new information into their existing knowledge. Interaction and cooperation–key elements–allow motivation, support, modeling, and coaching (Feden 1994).

Constructivist theory has important implications for both learning and teaching (Brown 1998). Activities should be active, self-directed, learner centered, and collaborative. Information should be available in a variety of media and sequences to accommodate differences in modality, cognitive styles, and multiple intelligences. The instructor becomes a guide, facilitator, and coach instead of a transmitter of knowledge.

So, How Well Do They Fit?

The career and technical education literature shows scant research on the effectiveness of WBT as a vehicle for constructivist learning, but findings from other areas can be applied.

Full, rich information. The very nature of WBT provides access to an incredible amount and variety of information:

- Trainers can provide any information that can be captured in a computer file–theory, examples, exercises, and tools that learners can use (Giroux et al. 1997).
- The Web itself has so much information that no one even knows how much there is, what there is, or how fast it's growing.
- Communication tools (e-mail, listservs, bulletin boards, newsgroups) allow learners to seek, contribute, exchange, discuss, and debate additional information (Kilby 1999).

Differences among learners. The technological capabilities built into WBT can make information available in different ways to suit different learners:

- Information can be presented in almost any modality or combination of modalities–text, still graphics, animation, audio, or video (D'Halluin et al. 1996).
- Multiple intelligences can be accommodated by a wide array of software, multimedia, and other technologies (Johnson 1998).
- In the nonlinear information landscape (Jin and Willis 1998), learners can use hyperlinks to access information in a self-directed sequence appropriate to their cognitive style.

Learning activities. The technology of WBT allows learning activities that foster construction of meaning:

- Communication tools allow interactive one-to-one or many-to-many exchanges of information–the building blocks of meaning–independent of time and place (Burge 1994).
- Those tools also allow learners to manage the learning environment, the group process, and their roles (Eastmond 1998).
- Asynchronous communication can allow more time for thoughtful reflection and participation by more learners (Parker and Rossner-Merrill 1998) and reduce the inhibitions sometimes felt in the face-to-face classroom (Black 1997).

The instructor as guide, facilitator, and coach. The technology of WBT can help instructors make the change from Sage on the Stage to Guide on the Side:

- Communication tools allow instructors to provide ad hoc guidance, advice, coaching, and feedback as learners construct meaning (Wilson and Lowry in press).
- Instructors can use hyperlinks, image maps, and threaded conferencing themes (Kilby 1999) to provide scaffolding to guide learners in constructing meaning.
- Multimedia technology can engage learners and enliven learning through small group discussions, role-playing, learner presentations, brainstorming, simulations–all online (Eastmond 1998).

Thorns on the rose? Although the technology of WBT *allows, enables, and promotes* constructivist learning, WBT does not always deliver in practice:

- Some learners need new technology skills before they can begin constructing meaning (Eastmond 1998).
- Some instructors have difficulty incorporating WBT technology into their teaching (Schneiderman et al. 1998).
- Some instructors find it difficult to be the Guide on the Side (Bednar and Charles 1999).
- Not all learners have the goals, interests, navigational skills, metacognitive skills, and prior knowledge of subject matter necessary to learn effectively in WBT (Tergan 1997).
- High-quality, interactive, multimedia, and nonlinear but scaffolded material is expensive (Giroux et al. 1997).
- The sheer magnitude of the Web can magnify problems found in any information system–disorientation, navigation, and information overload (Brandt 1997).
- Information on the Web may be unreliable, out of date, chaotic, or unavailable; technology can be slow and balky (Wilson and Lowry in press).
- Many websites contain nothing but unadorned text–no rich, nonlinear information landscape; no interactivity; no multimedia; no hyperlinks.

- The constructivist capabilities of WBT can be wasted in areas where memorization and rote learning may in fact be more appropriate (Airasian and Walsh 1997).

Some Conclusions

Considering advantages and disadvantages, strengths and shortcomings, capabilities and cautions, we can draw some conclusions:

- Enormous amounts of information can be ***available*** on the Web and in custom WBT training materials.
- However, available information is not always ***accessible.*** Learners may lack the search skills necessary to find it.
- Available information is not always ***usable.*** Learners may lack scaffolding to connect it to their knowledge, group and communication skills to process it, or metacognitive skills to construct meaning with it; and the information itself may be of little value.
- The Web's versatile mix of software, media, and technology has all the ***capability*** needed for the interaction and collaboration among learners, their environment, and their instructors that constructing meaning requires.
- The capability for interaction and collaboration is ***not always used.*** Learners can encounter screen after screen of text without a single nonlinear hyperlink or alternative multimedia presentation; conferencing can go on and on with a single organizing thread as scaffolding; one-to-one, one-to-many, and many-to-many communication may be used only rarely or ineffectively.
- The built-in potential and capabilities of WBT for constructivism are not always ***appropriate*** for every learning task. Sometimes it may be more appropriate to transmit knowledge than to have learners construct meaning.
- The Guide on the Side is more than just a catchy phrase–it's a role that instructors ***must actually play,*** from the first step in planning to the final step in execution, in order to realize the potential of WBT for constructivist learning.

Implications

Clear implications emerge for policy and practice:

- Sound instructional design should drive the use of WBT–not the appeal of technology for its own sake. Learning tasks should require constructing meaning rather than transmitting knowledge.
- Instructional planning should identify and provide appropriate scaffolding, advance organizers, hyperlinks, and multimedia for constructing meaning.
- Learners should receive training necessary to make effective use of any technology involved in WBT.
- Instructors should receive appropriate information and guidance to ensure that they act as the Guide on the Side, not the Sage on the Stage.

References

Airasian, P. W., and Walsh, M. E. "Constructivist Cautions." ***Phi Delta Kappan*** 78, no. 6 (February 1997): 444-449. (EJ 539 113)

Bednar, A. K., and Charles, M. T. "A Constructivist Approach for Introducing Preservice Teachers to Educational Technology." In ***SITE 99: Society for Information Technology and Teacher Education International Conference. Proceedings,*** edited by J. D. Price et al. Charlottesville, VA: Association for the Advancement of Computing in Education, 1999. (ED 432 306)

Black, Jane. ***Online Students Fare Better.*** 1997. <tenb.mta.ca/media/0197/farebetter.html>

Brandt, D. S. "Constructivism: Teaching for Understanding of the Internet." ***Communications of the ACM*** 40, no. 10 (October 1997): 112-117.

Brown, B. L. ***Distance Education and Web-Based Training. Information Series No. 379.*** Columbus: ERIC Clearinghouse on Adult, Career, and Vocational Education, Center on Education and Training for Employment, The Ohio State University, 1998. (ED 430 120) <ericacve.org/majorpubs2.asp?ID=20>

Burge, E. J. "Learning in Computer-Conferenced Contexts: The Learners' Perspective." ***Journal of Distance Education*** 9, no. 1 (Spring 1994): 19-43. (EJ 491 497)

D'Halluin, C.; Rethore, S.; Vanhille, B.; and Vieville, C. "Designing a Course on the Web: The Point of View of a Training Institute." In ***WebNet96 Conference Proceedings,*** edited by H. Maurer. Charlottesville, VA: Association for the Advancement of Computing in Education, 1996. (ED 427 658)

Driscoll, M. "Web-Based Training in the Workplace." ***Adult Learning*** 10, no. 4 (Summer 1999): 21-25.

Eastmond, D. V. "Adult Learners and Internet-Based Distance Education." In ***Adult Learning and the Internet, New Directions for Adult and Continuing Education*** no. 78, edited by B. Cahoon, pp. 33-41. San Francisco, CA: Jossey-Bass, 1998. (EJ 567 059)

Feden, P. D. "About Instruction: Powerful New Strategies Worth Knowing." ***Educational Horizons*** 73, no. 1 (Fall 1994): 18-24. (EJ 498 542)

Giroux, S.; Hotte, R.; and Dao, K. "Adaptive and Agile Learning Environments on the WWW." In ***WebNet 97 Conference of the WWW, Internet, and Intranet Proceedings,*** edited by S. Lobodzinski and I. Tomek. Charlottesville, VA: Association for the Advancement of Computing in Education, 1997. (ED 429 535)

Jin, S. H., and Willis, J. "A Web-Based Instructional Resource for Teacher Education Constructivist Approach." In ***SITE 98: Society for Information Technology & Teacher Education International Conference. Proceedings,*** edited by S. McNeil et al., pp. 435-439. Charlottesville, VA: Association for the Advancement of Computing in Education, 1998. (ED 421 138)

Johnson, D. "Effectively Integrating the World Wide Web and Computer Software Technology into Diverse Classrooms." Unpublished paper. 1998. (ED 429 808)

Kilby, T. "Frequently Asked Questions." ***Web-Based Training Information Center.*** Fairfax, VA: 1999. <www.webbasedtraining.com>

Parker, D., and Rossner-Merrill, V. "Socialization of Distance Education: The Web as Enabler." In ***WebNet 98: World Conference of the WWW, Internet, and Intranet. Proceedings,*** edited by H. Maurer and R. G. Olson. Charlottesville, VA: Association for the Advancement of Computing in Education, 1998. (ED 427 728)

Schneiderman, B.; Borkowski, E. Y.; Alavi, M.; and Norman, K. "Emergent Patterns of Teaching/Learning in Electronic Classrooms." ***Educational Technology Research and Development*** 46, no. 4 (1998): 23-42. (EJ 582 175)

Tergan, S.-O. "Conceptual and Methodological Shortcomings in Hypertext/Hypermedia Design and Research." ***Journal of Educational Computing Research*** 16, no. 3 (1997): 209-235. (EJ 561 443)

Wilson, B., and Lowry, M. "Constructivist Learning Happens All the Time on the Web." In ***Learning Technologies: Reflective and Strategic Thinking, New Directions for Adult and Continuing Education no. 88,*** edited by E. Burge. San Francisco, CA: Jossey-Bass, in press.

The work reported herein was supported under the National Dissemination Center for Career and Technical Education, PR/Award (No. V051A990004) as administered by the Office of Vocational and Adult Education, U.S. Department of Education. However, the contents do not necessarily represent the positions or policies of the Office of Vocational and Adult Education or the U.S. Department of Education, and you should not assume endorsement by the Federal Government.

CTE NATIONAL DISSEMINATION CENTER
CAREER & TECHNICAL EDUCATION
THE OHIO STATE UNIVERSITY
1900 KENNY ROAD, COLUMBUS OH 43210-1090